REMARKS

Claim status

Claims 28-52 were pending in the case at the time of the current Office Action. Claims 1-27 were previously cancelled. Claims 28 and 46 are currently amended herein. Claims 28-52 are currently pending in the application.

Section 103 rejections

In the current Office action, claims 28-52 are rejected under 35 U.S.C. 103(a) as being anticipated by Merle (US 5,130,518), hereinafter Merle, in view of Thalmann et al. (US 4,642,154), hereinafter Thalmann.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Merle concerns an electric welding apparatus for automatically welding heating coil fittings substantially of plastic material, for which a nominal welding work (i.e., energy), which is decisive for an optimum welding operation.

In the context of the claimed invention of the present application, Merle discloses, inter alia, to directly feed in the electric welding apparatus the nominal welding work (energy) (emphasis added) via scanning of a bar code at the fitting which includes data such as the nominal welding work. During a welding operation, in the controller of the welding apparatus, the scanned nominal welding work (energy) is compared with the respective actual welding work (energy) (emphasis added) and the welding operation is finished when the actual welding work has reached the nominal welding work. The actual welding work is obtained by an integrated circuit connected as effective value meter of the welding voltage and of the welding current to a calculator forming the welding capacity, i.e., actual welding power (P=UxI); whereby in the calculator, the effective values referred to are multiplicatively linked to obtain the actual welding power, which apparently by integration over the welding time leads to the actual welding work.

As a first aspect, Merle describes providing the welding apparatus with an ambient temperature gauge (sensor) (emphasis added) and a calculator which is fed, by the scanner via

the converter, with the standardized nominal welding work data of the fitting and which feeds signals of a temperature corrected nominal welding capacity (emphasis added) to the further input of the control. That is, in Merle, the standardized nominal welding work, which is referred to a particular reference temperature, is adjusted depending on the actual measured ambient temperature. (emphasis added)

As a second aspect, Merle describes configuring the welding apparatus such that the welding process does not start before the heating coil fitting connected has indeed a resistance value of the heating coil which is practically identical to the predetermined value. To this end, the scanner for scanning the fitting data detects, via the converter, data of the nominal resistance of the fitting related to a reference temperature of particularly 20°C as well as a temperature factor of the resistance and stores them in a storage. Correction and comparison means, which is connected to the ambient temperature gauge, is connected to the storage as well as to a resistance measuring circuit (emphasis added) connected to the fitting, compares the actual resistance measured therewith with the nominal resistance converted to the ambient temperature and, in case of deviation from a tolerance, triggers blocking means. That means that the welding process cannot start before it has been verified that the heating coil fitting is in order, i.e., has the resistance value predetermined and does not show any short-circuit or breakage. That is, from the point of view of the claimed invention of the present application, Merle merely discloses that the actual ohmic resistance of the heating coil is measured (emphasis added) as an electrical parameter of the heating coil.

Accordingly, a difference of the matter of Merle vis-à-vis the claimed invention of the present application is, inter alia, that Merle fails to disclose the particular element:

"measuring at least one electrical parameter of the heating coil fitting wherein an inductance of the heating coil of the heating coil fitting is measured as a first electrical parameter". (emphasis added)

In fact, Merle is silent about any measuring or use of the inductance of the heating coil (emphasis added). That is, it is not correct that in Merle, the current of the coil is monitored and the inductance must be monitored based on the current measurement. The location cited in the current Office action (column 7, lines 5-25) does neither explicitly nor implicitly refer to a monitoring of the inductance of the heating coil. Furthermore, Merle does not mention the word

"inductance" at all. Moreover, in Merle, the resistance, but not impedance, of the heating coil is measured. Furthermore, Merle fails to consider a phase shift between the welding current and welding voltage. Therefore, a person skilled in the art would not obtain from Merle the idea to measure the inductance of the heating coil, nor to use the inductance value of the heating coil to determine an energy input correction factor.

Merle fails to disclose a measurement of the inductance of the heating coil fitting and/or control of the energy input into the heating coil fitting using an energy input correction factor determined from the measured inductance to adjust a welding parameter. That is, Merle shows only control of the energy input based on measured ohmic resistance of the heating element of the fitting with respect to the ambient temperature.

Thalmann discloses measurement of impedance, but not the inductance, (emphasis added) of the heating element of a fitting. In fact, in Thalmann, the impedance of the heating element is measured to distinguish between two types of fittings, namely muffs and clamping rings. Based on the detected type of fitting, the energy input is controlled inter alia based on the ohmic resistance of the heating element. Thalmann simply describes determining whether the heating element is a muff or a clamping ring by measuring the impedance (also called the apparent resistance) (emphasis added) of the coil with an alternating current wherein the ohmic resistance and the inductive reactance of the coil interact. However, Thalmann is not performing an actual measurement of inductance (emphasis added). Thalmann simply states that since the inductance of an air coil (muff) is considerably greater than that of the arrangement of a wire mat (clamping ring), as a result of the measurement of the impedance (emphasis added) of either the coil or the mat, it can be determined whether a muff or a clamping ring is involved.

Therefore, both Merle and Thalmann are totally silent with respect to determination of an energy input correction factor from a measured inductance (emphasis added) of the heating coil fitting.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claims 28 and 46 are not unpatentable over Merle in view of Thalmann, and it is respectfully submitted that independent claims 28 and 46 define allowable subject matter. Also, since claims 29-45 and 47-52 depend either directly or indirectly from claims 28 and 46, it is respectfully

submitted that claims 29-45 and 47-52 define allowable subject matter as well. Applicants respectfully request that the rejection of claims 28-52 under 35 U.S.C. 103(a) be removed.

Accordingly, the applicant respectfully requests reconsideration of the rejections based on at least the foregoing. After such reconsideration, it is urged that allowance of claims 28-52 will be in order.

Respectfully submitted,

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